Honeywell

ST 3000 Smart Transmitter

Series 100 High Temperature GP Models

STG14T, STF14T 0-500 psig / 0-35 barg

34-ST-03-70
10/2002

Specification and Model Selection Guide

Introduction

In 1983, Honeywell introduced the first Smart Pressure Transmitter— the ST 3000®. In 1989, Honeywell launched the first all digital, bi-directional protocol for smart field devices. Today, Honeywell transmitters demonstrate proven reliability in hundreds on installations in a wide variety of industries and applications. For applications requiring direct connection to processes requiring small flange, small sanitary connections or 1/2" NPT, Honeywell offers the STG14T transmitter. Applications include gauge pressure for reaction vessels in the chemical industry as well as level applications in both the chemical and hydrocarbon processing industries with a relatively high process temperature of 302F (150C). Applications for the food and pharmaceutical industries typically use sanitary connections and M-20 fill fluid.

All ST 3000 transmitters can provide a 4-20 mA output, Honeywell Digitally Enhanced (DE) output, HART* output, or FOUNDATION™ Fieldbus output. When digitally integrated with Honeywell's Process Knowledge System™, EXPERION PKS™, ST 3000 instruments provide a more accurate process variable as well as advanced diagnostics.

Honeywell's high-performance ST 3000 S100 transmitters lead the industry in:

- Accuracy
- Stability
- Reliability
- Rangeability
- Warranty

Includes Lifetime™ Tranmsitters:

- Accuracy = +/-0.0375%
- Stability = +/-0.01% per year
- Reliability = 470 years MTBF
- Rangeability = 400 to 1
- Lifetime Warranty = 15 years

Figure 1—Series 100 High Temperature GP Transmitters feature proven piezoresistive sensor technology.

The devices provide comprehensive self-diagnostics to help users maintain high uptime, meet regulatory requirements, and attain high quality standards. S100 transmitters are ideal for critical applications, such as custody transfer of natural gas and energy and material balances, where accuracy and stability are of the utmost importance.

"Our commitment to Honeywell field instruments is based on seamless integration with our Honeywell system and the enhanced fault detection that the Honeywell DE protocol offers. Honeywell instruments also offer us a better way of ensuring database integrity over simple analog instruments. In addition, Honeywell's high-quality support has enabled us to better implement solutions to some of our more difficult problems. We have used Honeywell differential pressure smart transmitters for the past eight years. Based on their accuracy and low failure rates, we are now targeting critical flow applications that require the robustness that these transmitters bring."

DCS Systems Engineer
International Integrated Oil Company

Description

The ST 3000 transmitter can replace any 4 to 20 mA output transmitter in use today and operates over a standard two-wire system.

The measuring means is a piezoresistive sensor, which actually contains three sensors in one. It contains a differential pressure sensor, a temperature sensor, and a static pressure sensor.

Microprocessor-based electronics provide higher span-turndown ratio, improved temperature and pressure compensation, and improved accuracy.

The transmitter's meter body and electronics housing resist shock, vibration, corrosion, and moisture. The electronics housing contains a compartment for the single-board electronics, which is isolated from an integral junction box. The single-board electronics is replaceable and interchangeable with any other ST 3000 Series 100 or Series 900 model transmitter.

Like other Honeywell transmitters, the ST 3000 features two-way communication between the operator and the transmitter through our Smart Field Configurator (SFC). You can connect the SFC anywhere that you can access the transmitter signal lines.

The SCT 3000 Smartline® Configuration Toolkit provides an easy way to configure instruments using a personal computer. The toolkit enables configuration of devices before shipping or installation. The SCT 3000 can operate in the offline mode to configure an unlimited number of devices. The database can then be loaded downline during commissioning.

Features

- Choice of linear or square root output conformity is a simple configuration selection.
- Direct digital integration with Experion PKS and other control systems provides local measurement accuracy to the system level without adding typical A/D and D/A converter inaccuracies.
- Unique piezoresistive sensor automatically compensates input for temperature and static pressure.Added "smart" features include configuring lower and upper range values, simulating accurate analog output, and selecting preprogrammed engineering units for display.
- Smart transmitter capabilities with local or remote interfacing means significant manpower efficiency improvements in commissioning, start-up, and ongoing maintenance functions.

Tank Level Measurement Application

Pressure transmitters are commonly used to measure the level in an open or non-pressurized tank. See Figure 2.

The level is directly proportional to the DP (H1) measurement, by the relationship:

Level = H1 x SGp

Where,
SGp = specific gravity of process fluid.

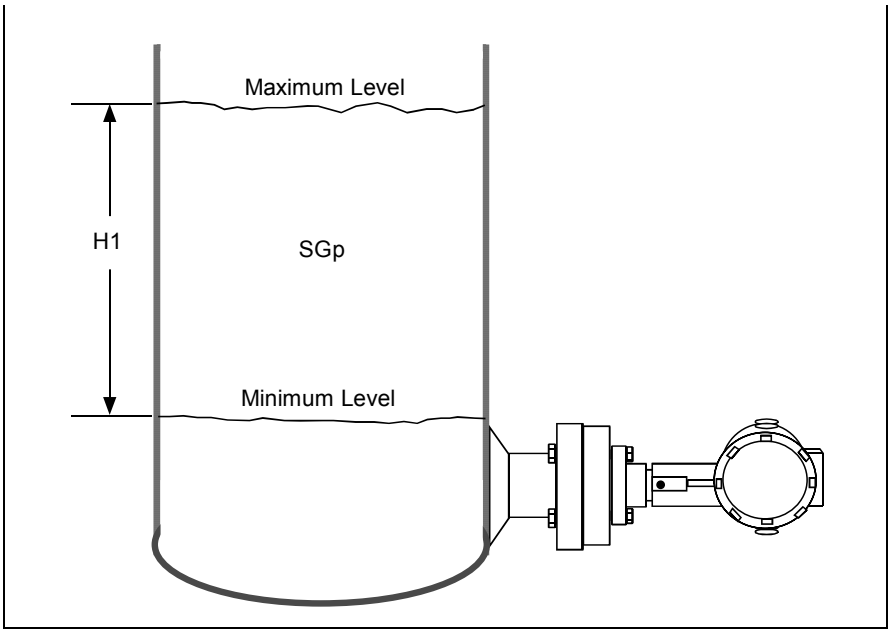


Figure 2 —Tank Level Measurement. Small Flange shown.

Specifications

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Silicone Fill Fluid								
Ambient Temperature	25±1	77±2	-40 to 85	-40 to 185	-40 to 93	-40 to 200	-55 to 125	-67 to 257
Process Interface Temp.	25±1	77±2	-40 to 150	-40 to 302	-40 to 150	-40 to 302	NA	NA
Neobee Fill Fluid								
Ambient Temperature	25±1	77±2	-15 to 75	5 to 167	-15 to 75	5 to 167	-15 to 75	5 to 167
Process Interface Temp.	25±1	77±2	-15 to 110	5 to 230	-15 to 110	5 to 230	NA	NA
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Overpressure								
Sanitary/Threaded psi	0		750*		750*			
bar	0		52*		52*			
Flanged			**316 SS**		**316 SS**			
ANSI Class 150 **psi**	0		275**		215***			
bar	0		19**		15***			
ANSI Class 300 **psi**	0		720**		560			
bar	0		50**		39			
Vacuum Region - Minimum Pressure mmHg absolute	atmospheric		300 †		2 (short term ††)			
inH_2O absolute	atmospheric		150		1 (short term ††)			
Supply Voltage, Current, and Load Resistance	**Voltage Range:** 10.8 to 42.4 Vdc at terminals **Current Range:** 3.8 to 21.8 mA **Load Resistance:** 0 to 1440 ohms (as shown in Figure 3)							

* Sanitary pressure rating depends on the type of clamp (Single toggle type rated to 150 psi/10 bar).

** Flange rating versus temperature is per ANSI B16.5. Value shown is for reference temperature.

*** Flange rating versus temperature is per ANSI B16.5. Value shown is for operative limit temperature.

† Limit is 600 mmHg absolute (321 inH_2O absolute) for Neobee fill.

†† Short term equals 2 hours at 70 °C (158 °F).

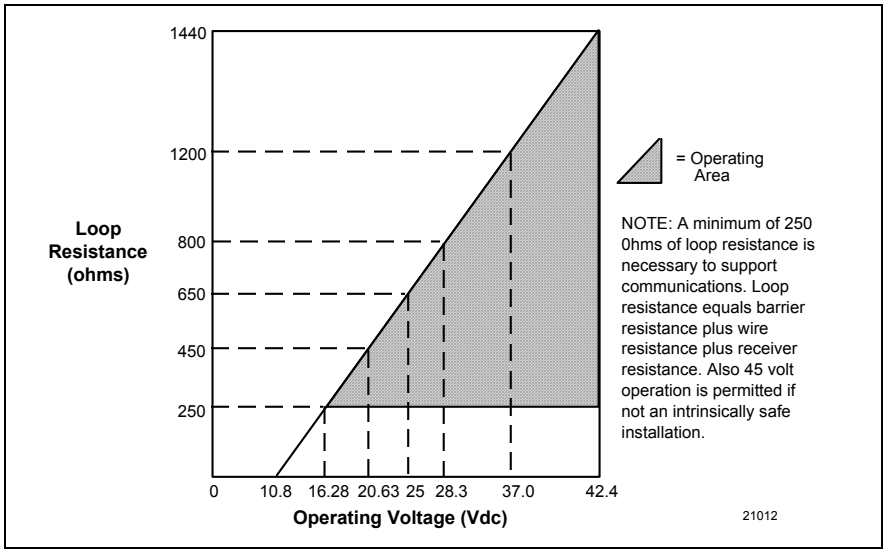


Figure 3 —Supply Voltage and Loop Resistance Chart.

Ambient Temperature De-rating

Silicone Fill Fluid Process temperatures above 125 °C (257 °F) require de-rating the ambient limit as follows:		**Neobee Fill Fluid** Process temperatures above 85 °C (185 °F) require de-rating the ambient limit as follows:	
Process Temperature	**Ambient Temperature Limit**	**Process Temperature**	**Ambient Temperature Limit**
150 °C (302 °F) 140 °C (284 °F) 125 °C (257 °F)	50 °C (122 °F) 60 °C (140 °F) 85 °C (185 °F)	110 °C (230 °F) 100 °C (212 °F) 85 °C (185 °F)	50 °C (122 °F) 60 °C (140 °F) 75 °C (167 °F)

Performance Under Rated Conditions* - Models STG14T and STF14T 0-500 psig (0-35 barg)

Parameter	Description
Upper Range Limit psig/barg**	500 psig, 35 barg
Minimum Span psig/ barg	0.9 psig, 0.063 barg
Turndown Ratio	550:1
Zero Elevation and Suppression	No limit except minimum span from absolute zero to 100% of URL. Specifications valid over this range.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION Fieldbus use Digital Mode specifications. For HART use Analog Mode specifications.*	**In Analog Mode:** ±0.0875% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (20 psi), accuracy equals: $\pm[0.025 + 0.0625 \left(\frac{20\ psi}{span\ psi}\right)]$ or $\pm[0.025 + 0.0625 \left(\frac{1.4\ bar}{span\ bar}\right)]$ in % span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (20 psi), accuracy equals: $\pm[0.0125 + 0.0625 \left(\frac{20\ psi}{span\ psi}\right)]$ or $\pm[0.0125 + 0.0625 \left(\frac{1.4\ bar}{span\ bar}\right)]$ in % span
Zero Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.0625% of calibrated span. For URV below reference point (50 psi), effect equals: $\pm[0.0125 + 0.05 \left(\frac{50\ psi}{span\ psi}\right)]$ or $\pm[0.0125 + 0.05 \left(\frac{3.5\ bar}{span\ bar}\right)]$ in % span **In Digital Mode:** ±0.05% of calibrated span For URV below reference point (50 psi), effect equals: $\pm 0.05 \left(\frac{50\ psi}{span\ psi}\right)$ or $\pm 0.05 \left(\frac{3.5\ bar}{span\ bar}\right)$ in % span
Combined Zero and Span Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.10% of calibrated span. For URV below reference point (50 psi), effect equals: $\pm[0.05 + 0.05 \left(\frac{50\ psi}{span\ psi}\right)]$ or $\pm[0.05 + 0.05 \left(\frac{3.5\ bar}{span\ bar}\right)]$ in % span **In Digital Mode:** ±0.075% of calibrated span For URV below reference point (50 psi), effect equals: $\pm[0.025 + 0.05 \left(\frac{50\ psi}{span\ psi}\right)]$ or $\pm[0.025 + 0.05 \left(\frac{3.5\ bar}{span\ bar}\right)]$ in % span
Stability	±0.04% of URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), 10 to 55% RH, and 316L SS diaphragm.

** Transmitter URL limit or maximum process connection rating, whichever is lower.

Performance Under Rated Conditions – General for all Models

Parameter	Description
Output (two-wire)	Analog 4 to 20 mA or digital communications DE mode. Options available for FOUNDATION Fieldbus and HART protocol.
Supply Voltage Effect	±0.005% span per volt.
Damping Time Constant	Adjustable from 0 to 32 seconds digital damping.
EMC Classification	Group 1, Class A, ISM Equipment (EN 55011, emissions), Industrial Equipment (EN 50082-2, immunity)
CE Conformity (Europe)	89/336/EEC, Electromagnetic Compatibility (EMC) Directive.
Lightning Protection Option (Code "LP")	Leakage Current: 10 microamps max. @ 42.4 VDC, 93°C Impulse Rating: (rise/decay) 10/20 µ sec. 5,000 Amps (50 strikes) 10,000 Amps (20 strikes) 10/1000 µ sec. 250 Amps (1000 strikes) 500 Amps (400 strikes)

Physical and Approval Bodies

Parameter	Description
Process Interface	See Model Selection Guide for Material Options for desired process connection.
Diaphragm Materials (wetted)	316L Stainless Steel
Gasket Ring Materials (wetted)	316L Stainless Steel
Mounting Flange (non-wetted)	316 Stainless Steel.
Fill Fluid	Silicone (DC 200) or Neobee (M20)
Electronic Housing	Epoxy-Polyester hybrid paint. Low copper-aluminum alloy. Meets NEMA type 4X (watertight) and designed to meet NEMA 7 (explosion proof).
Process Connections	**Process Head:** 1/2-inch NPT. **Sanitary**: 2" Sanitary Tri-Clamp. **Flange:** 1/2", 1", 1 1/2" and 2" 150# or 300# ANSI flange.
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Mounting	1/2-inch NPT, sanitary seal, or flange mount connection.
Dimensions	See Figures 4 to 6
Net Weight	7 pounds (3.2 Kg) to 15 pounds (7 Kg)

Table continued on next page ⇒

Physical and Approval Bodies, continued

Parameter	Description
Approval Bodies **- Hazardous Areas**	Approved as explosion proof and intrinsically safe for use in Class I, Division 1, Groups A, B, C, D locations, and nonincendive for Class I, Division 2, Groups A, B, C, D locations. Approved EEx ia IIC T4, T5, T6 and EEx d IIC T5, T6 per ATEX standards. See attached Model Selection Guide for options.
Pressure Equipment Directive **(97/23/EC)**	The ST 3000 pressure transmitters listed in this Specification have no pressurized internal volume or have a pressurized internal volume rated less than 1,000 bar (14,500 psig) and/or have a maximum volume of less than 0.1 liter. Therefore, these transmitters are either; not subject to the essential requirements of the directive 97/23/EC (PED, Annex 1) and shall not have the CE mark, or the manufacturer has the free choice of a module when the CE mark is required for pressures > 200 bar (2,900 psig).

NOTE: Pressure transmitters that are part of safety equipment for the protection of piping (systems) or vessel(s) from exceeding allowable pressure limits, (equipment with safety functions in accordance with Pressure Equipment Directive 97/23/EC article 1, 2.1.3), require separate examination.

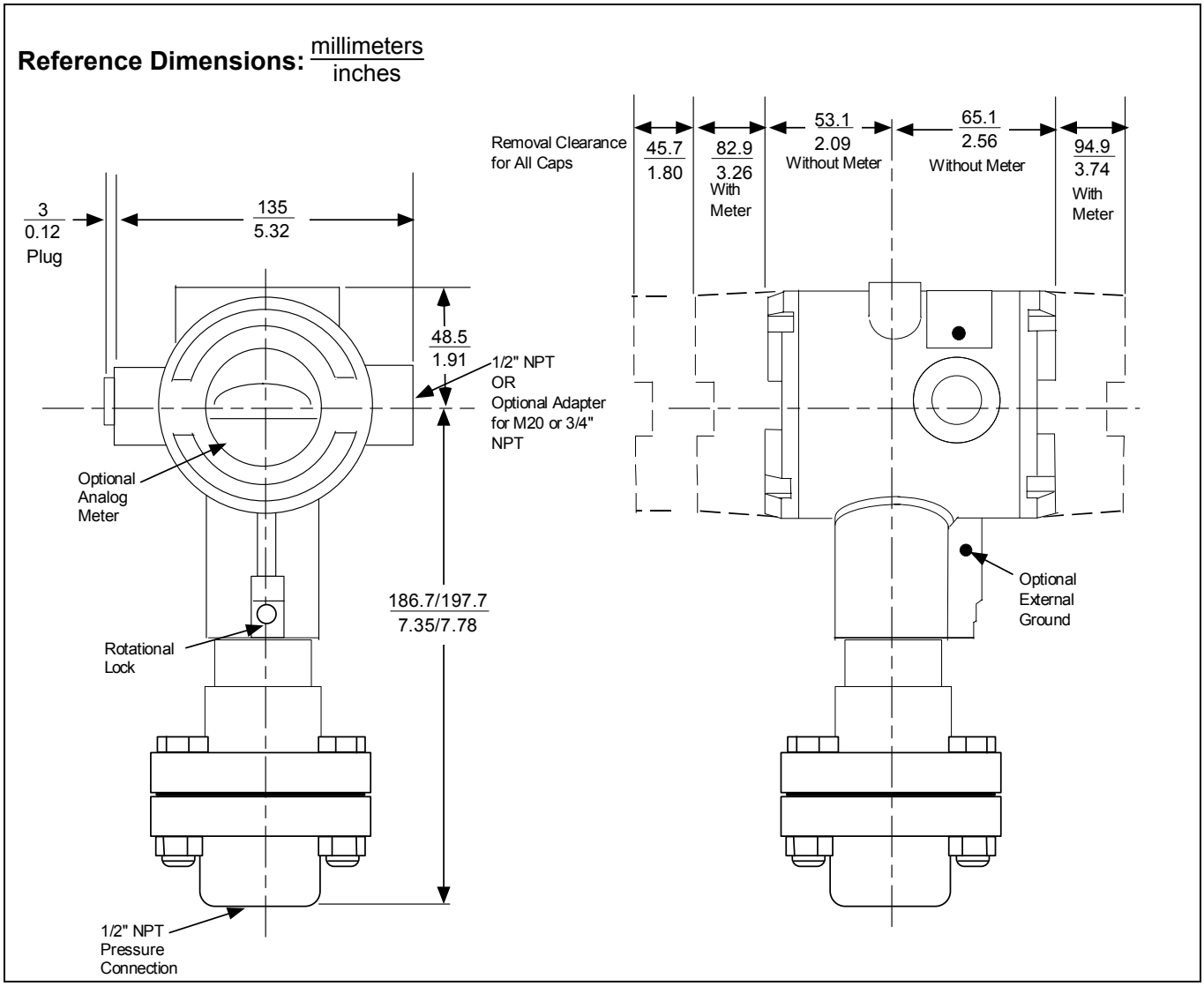

Reference Dimensions: millimeters / inches
Removal Clearance for All Caps
45.7 / 1.80
82.9 / 3.26 With Meter
53.1 / 2.09 Without Meter
65.1 / 2.56 Without Meter
94.9 / 3.74 With Meter
3 / 0.12 Plug
135 / 5.32
48.5 / 1.91
1/2" NPT OR Optional Adapter for M20 or 3/4" NPT
Optional Analog Meter
186.7/197.7 / 7.35/7.78
Rotational Lock
1/2" NPT Pressure Connection
Optional External Ground

Figure 4 —Typical mounting dimensions for 1/2-inch NPT connection models for reference.

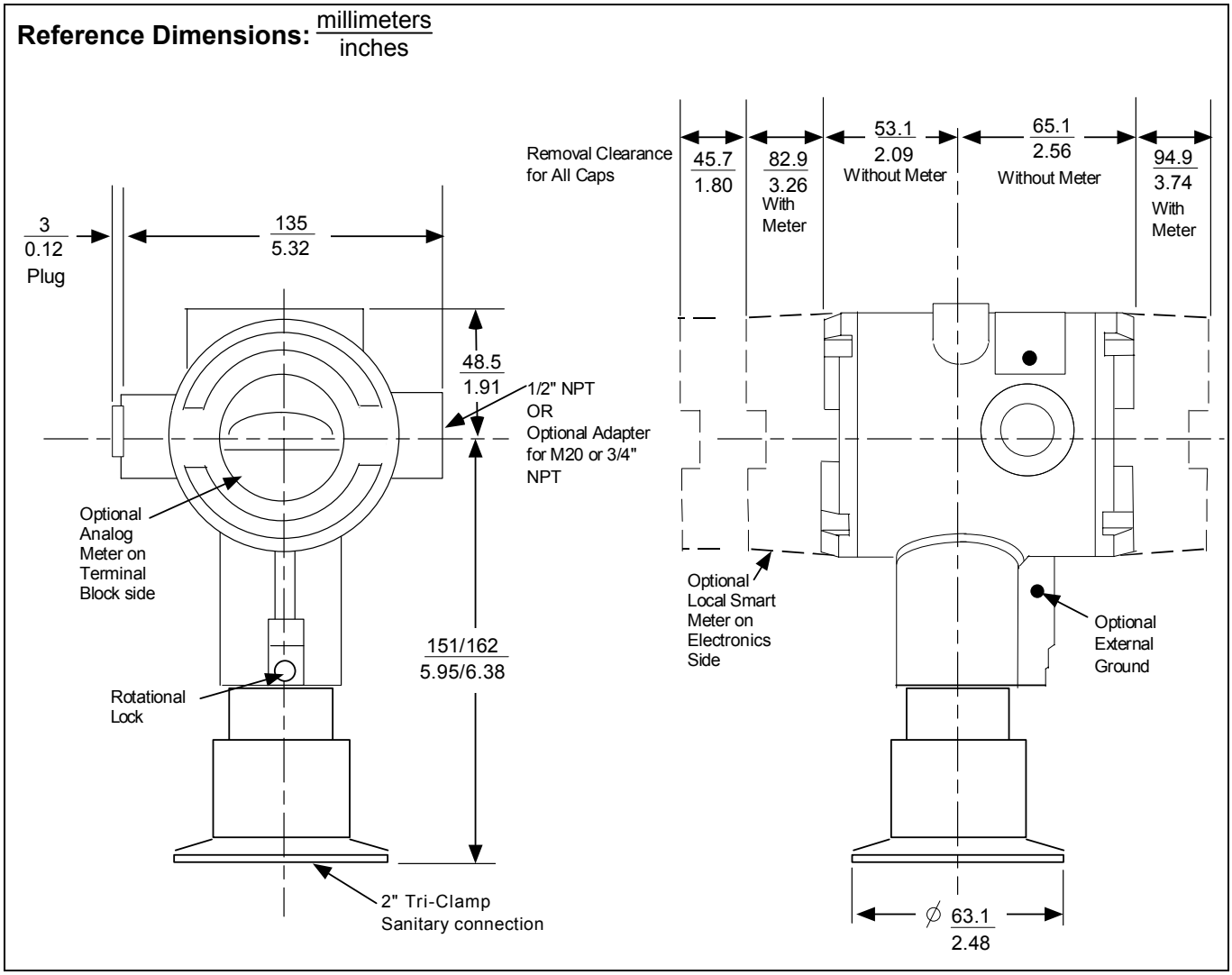
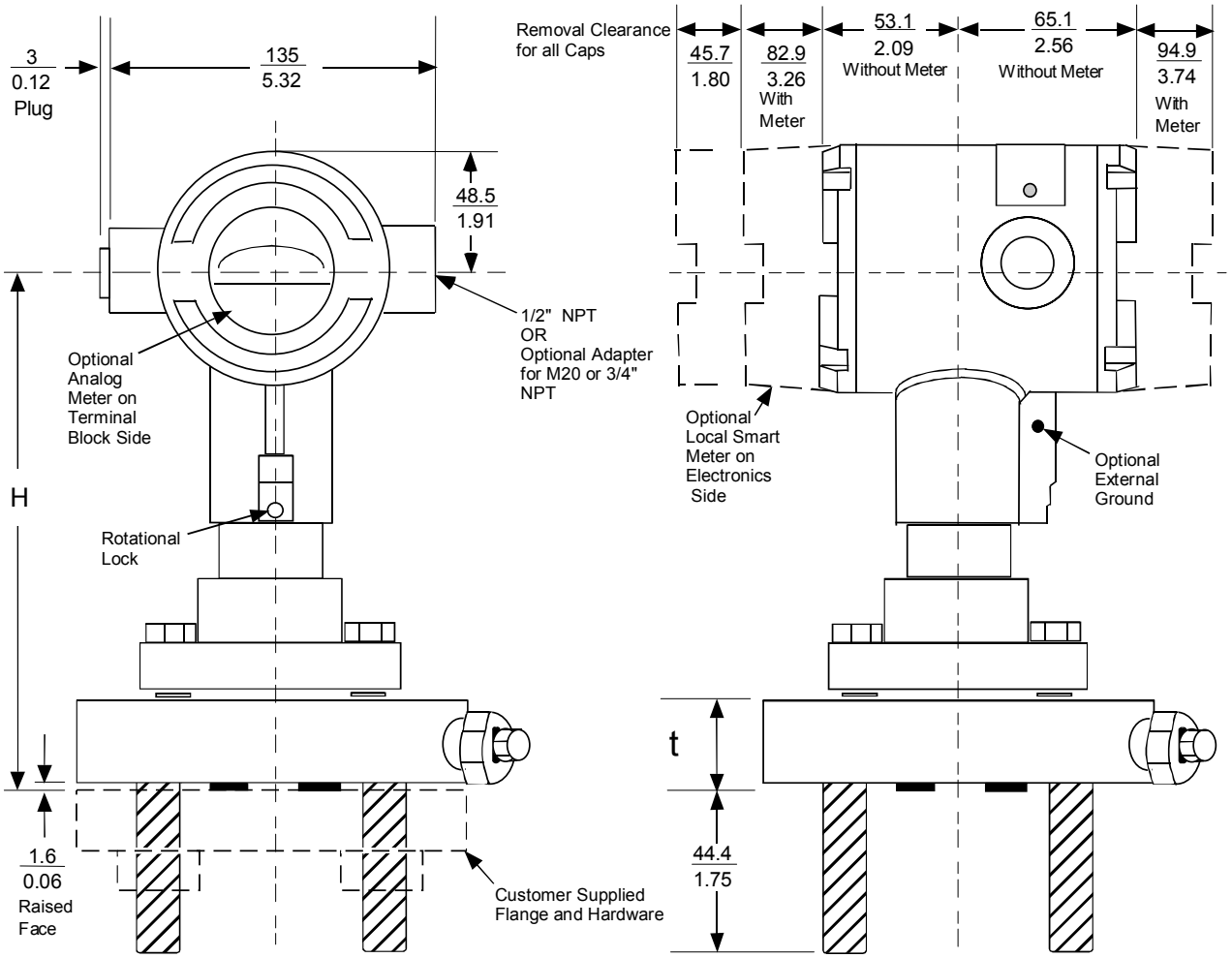
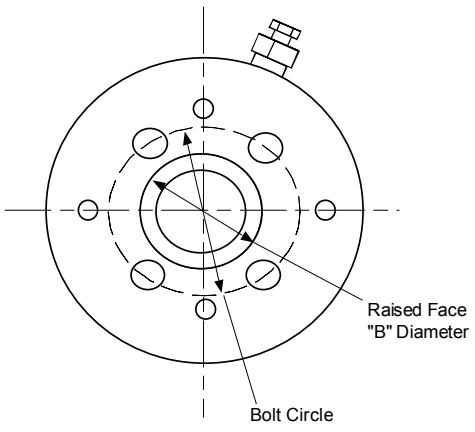


Figure 5 —Typical mounting dimensions for flush sanitary seal connection models for reference.

Reference Dimensions: millimeters / inches





Flange Description		Flange Thickness (t)	Height "H"	Flange Dia.	Stud Size *	Hole Dia.	Bolt Circle	Raised Face "B" Dia.
150 lb	1/2"	26.6 1.05	187.1 7.37	88.9 3.5	1/2-13		60.3 2.38	34.9 1.38
	1"			108.0 4.25	1/2-13		79.4 3.12	50.8 2.00
	1-1/2"			127.0 5.00	1/2-13		98.4 3.88	73.0 2.88
	2"			154.4 6.00		19 0.75	120.7 4.75	92.0 3.62
300 lb	1"	28.6 1.13	189.2 7.45	124.0 4.88	5/8-11		88.9 3.50	50.8 2.00
	1-1/2"			155.5 6.12	3/4-10		114.3 4.50	73.0 2.88
	2"			165.1 6.50		19 0.75	127.0 5.00	92.0 3.62

* Studs are threaded and welded in place.

Figure 6 —Typical mounting dimensions for small flange connection models for reference.

Options

Indicating Meter (ME and SM Options)
Two integral meter options are available. An analog meter (option ME) is available with a 0 to 100% linear scale. The Smart Meter (option SM) provides an LCD display for both analog and digital output and can be configured to display pressure in pre-selected engineering units.

Lightning Protection (Option LP)
A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.

HART Protocol Compatibility (Option HC)
An optional electronics module is available for the ST 3000 that provides HART Protocol compatibility. Transmitters with the HART Option are compatible with the AMS System. (Contact your AMS Supplier if an upgrade is required.)

Transmitter Configuration (Option TC)
The factory can configure the transmitter linear/square root extraction, damping time, LRV, URV and mode (analog/digital) and enter an ID tag of up to eight characters and scratchpad information as specified.

Lifetime Warranty (Option WL)
Extends limited 1-year warranty policy to 15 years for ST 3000 S100 pressure transmitters. See Honeywell Terms and Conditions.

Indicator Configuration (Option CI)
Provides custom configuration of Smart Meters

Tagging (Option TG)
Up to 30 characters can be added on the stainless steel nameplate mounted on the transmitter's electronics housing at no extra cost. Note that a separate nameplate on the meter body contains the serial number and body-related data. A stainless steel wired on tag with additional data of up to 4 lines of 28 characters is also available. The number of characters for tagging includes spaces.

Custom Calibration and ID in Memory (Option CC)
The factory can calibrate any range within the scope of the transmitter's range and enter an ID tag of up to eight characters in the transmitter's memory.

FOUNDATION Fieldbus (Option FF)
Equips transmitter with FF protocol for use in 31.25 kbit/s FF networks. See document 34-ST-03-72 for additional information on ST 3000 Fieldbus transmitters.

Specifications are subject to change without notice

Ordering Information

Contact your nearest Honeywell sales office, or

In the U.S.:
Honeywell
Industrial Automation & Control
16404 North Black Canyon Hwy.
Phoenix, AZ 85053
1-800-288-7491

In Canada:
The Honeywell Centre
155 Gordon Baker Rd.
North York, Ontario M2H 3N7
1-800-461-0013

In Latin America:
Honeywell Inc.
480 Sawgrass Corporate Parkway,
Suite 200
Sunrise, FL 33325
(954) 845-2600

In Europe and Africa:
Honeywell S. A.
Avenue du Bourget 1
1140 Brussels, Belgium

In Eastern Europe:
Honeywell Praha,
s.r.o. Budejovicka 1
140 21 Prague 4,
Czech Republic

In the Middle East:
Honeywell Middle East Ltd.
Khalifa Street,
Sheikh Faisal Building
Abu Dhabi, U. A. E.

In Asia:
Honeywell Asia Pacific Inc.
Honeywell Building,
17 Changi Business Park Central 1
Singapore 486073
Republic of Singapore

In the Pacific:
Honeywell Pty Ltd.
5 Thomas Holt Drive
North Ryde NSW Australia 2113
(61 2) 9353 7000

In Japan:
Honeywell K.K.
14-6 Shibaura 1-chrome
Minato-ku, Tokyo, Japan 105-0023

Or, visit Honeywell on the World Wide Web at: **http://www.honeywell.com**

Model Selection Guide (34-ST-16-47)

Instructions

- Select the desired Key Number. The arrow to the right marks the selection available.
- Make one selection from each Table I and II using the column below the proper arrow.
- Select as many Table III options as desired (if no options or approvals are desired, specify 9X). An approval code MUST be selected. A (◆) denotes unrestricted availability. A letter denotes restricted availability. Restrictions follow Table IV.

Key Number		I		II		III (Optional)		IV
_ _ _ _ _ _	-	_ _ _	-	_ _ _ _ _	-	_ _, _ _	+	XXXX

KEY NUMBER

Span	Selection	Availablilty	
0-0.9 to 0-500 psig/0-0.063 to 0-35 barg	STG14T	↓	
0-0.9 to 0-500 psig/0-0.063 to 0-35 barg Flange Mount	STF14T		↓

(The STG & STF14T replaces the STG & STF15T models)

TABLE I - METER BODY

		Barrier Diaphragm	Process Heads (wetted)			
Materials	Sanitary Clamp	316L SS		Z _ _	◆	
	Threaded	316L SS	316 SS	E _ _	◆	
		Barrier Diaphragm	**Lower (wetted)**			
	Flange	316L SS	316 SS	E _ _		◆
Fill Fluid	Silicone			_ 1 _	◆	◆
	Neobee			_ 4 _	◆	◆
Process Head Connection	No Selection			_ _ 0	**w**	◆
	1/2" NPT (female)			_ _ G	**f**	

TABLE II FLANGE ASSEMBLY

			Selection		
No Selection			0 _ _ _ _	◆	◆
Flange	No Selection		_ 0 _ _ _	◆	
	1/2" ANSI Class 150		_ G _ _ _		◆
	1" ANSI Class 150		_ Q _ _ _		◆
	1" ANSI Class 300		_ V _ _ _		◆
	1 1/2" ANSI Class 150		_ W _ _ _		◆
	1 1/2" ANSI Class 300		_ X _ _ _		◆
	2" ANSI Class 150		_ Y _ _ _		◆
	2" ANSI Class 300		_ Z _ _ _		◆
No Selection			_ _ 0 _ _	◆	◆
No Selection			_ _ _ 0 _	◆	◆
Vent/ Drain	No Selection		_ _ _ _ 0	◆	◆
	Vent/Drain	316 SS	_ _ _ _ 1		◆

Model Selection Guide, cont.

TABLE III - OPTIONS	Selection	Availability STF14T	Availability STG14T	
None	00	◆	◆	
FOUNDATION Fieldbus Communications	FF	r	r	b
HART Protocol compatible electronics	HC	z	z	
Analog Meter (0-100 Even 0-10)	ME			b
Smart Meter	SM			
Customer Configuration of Smart Meter	CI	e	e	
Local Zero	LZ	x	x	b
Local Zero and Span	ZS	m	m	
Lightning Protection	LP	◆	◆	
Custom Calibration and I.D. in Memory	CC	◆	◆	
Transmitter Configuration	TC	◆	◆	
Write Protection	WP	◆	◆	
316 SS (NACE) Bolts and 304 SS (NACE) Retaining Ring for Head and 316 SS (NACE) Bolts for Adapter	CR	d	d	
Stainless Steel Customer Tag (4 lines, 28 characters per line, customer supplied information)	TG	◆	◆	
Stainless Steel Customer Tag (blank)	TB	◆	◆	
Viton Process Head Gasket (teflon is standard)	VT	d	◆	
316 ST.ST. Electronics Housing - *(with M20 Conduit Connections)*	SH	n	n	
M20 316 SS Conduit Adapter	A1	n	n	b
3/4" NPT 316 SS Conduit Adapter	A2	y	y	
Stainless Steel Housing with M20 to 1/2" NPT 316 SS Conduit Adapter *(use for FM and CSA Approvals)*	A3	i	i	
Calibration Test Report & Certificate of Conformance (F3399)	F1	◆	◆	b
Certificate of Conformance (F3391)	F3	◆	◆	
Certificate of Origin (F0195) ("Attestation if Amiens built.")	F5	◆	◆	
FMEDA (SIL) Certificate	F6	◆	◆	
NACE Certificate (F0198)	F7	k	k	
Additional Warranty - 1 year	W1	◆	◆	
Additional Warranty - 2 years	W2	◆	◆	b
Additional Warranty - 3 years	W3	◆	◆	
Additional Warranty - 4 years	W4	◆	◆	
Lifetime Warranty - 15 years	WL	◆	◆	

Model Selection Guide, cont.

Approval Body	Approval Type	Location or Classification		Availability STF14T	STG14T	
No hazardous location approvals			9X	◆	◆	
Factory Mutual	Explosion Proof	Class I, Div. 1, Groups A,B,C,D	1C	◆	◆	b
	Dust Ignition Proof	Class II, III, Div. 1, Groups E,F,G				
	Non-Incendive	Class I, II, III, Div. 2, Groups A,B,C,D,F,G				
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G				
	Explosion Proof	Class I, Div. 1, Groups B,C,D				
CSA	Dust Ignition Proof	Class II, III, Div. 1 Groups E,F,G	2J	◆	◆	
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G				
	Suitable for use in	Class I, II, III, Div. 2, Groups A,B,C,D,E,F,G				
SA	Intrinsically Safe	Ex ia IIC T4	4G	◆	◆	
	Non-Sparking	Ex n IIC T6				
ATEX*	Intrinsically Safe Zone 0/1	Ⓔx II 1 G EEx ia IIC T4, T5,T6	3S	◆	◆	
	Flameproof, Zone 1	Ⓔx II 2 G EEx d IIC T5, T6, Enclosure IP 66/67	3D	◆	◆	
	Non-Sparking Zone 2	Ⓔx II 3 G EEx nA, IIC T6 (Honeywell). Enclosure IP 66/67	3N	◆	◆	

*See ATEX installation requirements in the ST 3000 User's Manual

97/23/EC Pressure Equipment Directive (PED)

The ST 3000 pressure transmitters listed in this Model Selection Guide are in conformity with the essential requirements of the PED. A formal statement from TÜV Industry Service Group of TÜV America, Inc., a division of TÜV Süddeutschland, a Notified Body regarding the Pressure Equipment Directive, is available upon request

TABLE IV

Factory Identification	XXXX	◆	◆	

RESTRICTIONS

Restriction Letter	Table	Available Only With Selection	Table	Not Available With Selection
a		Approval Body Pending		
b	III	Select only one option from this group.		
d	I	E _ _		
e	III	SM		
f			I	Z _ _
i	III	1C or 2J		
k	III	CR		
m			III	FF, ME
n			III	1C, 2J
r			III	TC, ME, 4G, 3S
w	I	Z _ _		
x	III	FF, SM		
y	III	1C, 2J		
z			III	4G

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ST 3000® is a registered trademark of Honeywell International Inc.
HART* is a trademark of the Hart Communication Foundation.
FOUNDATION™ is a trademark of the Fieldbus Foundation.

Industrial Measurement and Control
Honeywell International Inc.
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Phoenix, Arizona 85053

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